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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/590,897	06/09/2000	Kouichi Takahashi	16869P010700US	1657

7590 04/21/2008
Robert C Colwell
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San Francisco, CA 94111-3834

EXAMINER

MITCHELL, JAMES M

ART UNIT	PAPER NUMBER
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2813

MAIL DATE	DELIVERY MODE
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04/21/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/590,897

Applicant(s)

TAKAHASHI ET AL.

Examiner

JAMES M. MITCHELL

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9-12 is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This office action is in response to the request for continued examination filed December 23, 2003.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al. (U.S. 5,844,311).

Watanabe (Fig. 4) discloses:

(cl. 1) a sealing structure for multi-chip modules, comprising: a wiring board (41) having one face (e.g. top portion) mounted with a plurality of semiconductor devices (42) and another face having connecting pins (43) arranged thereover; a frame (e.g. not labeled

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connected to c ring and o-ring) having a thermal expansion rate compatible with that of the wiring board (aluminum and ceramic; Col 2, Lines 14-17) provided on the circumference of that face of the wiring board mounted with the semiconductor devices; a cap (44, 47) covering the plurality of semiconductor devices, a heat conducting material (46) provided between the plurality of semiconductor devices and the cap for transmitting heat generated by the plurality of semiconductor devices to the cap; an attachment (e.g. screw, not labeled) for fixing the frame and the wiring board to each other, and an intervening member (c-ring, 49 and o-ring, not labeled) disposed between the frame and the cap such that the frame and the cap are spaced apart wherein there is an absence of any direct physical contact between the frame and cap; (cl. 2, 3) wherein the intervening member comprises an elastic/ packing substance (e.g. O-ring, *not labeled* & c-ring, 49 whereby the ring is a part of the packaging and therefore is packing material; (cl. 7) the cap comprises an air-cooled heat sink (47).

Watanabe does not explicitly disclose the features of its admitted prior art, *WAPA*, has a cap with a thermal expansion rate different from that of the frame.

However, Watanabe (Col. 3, Lines 51-53 & Col. 4, Lines 50-55) discloses for its invention a frame having a thermal expansion rate compatible with that of the wiring board and its cap having a thermal expansion rate different from that of the frame (e.g. same materials as claimed).

It would have been obvious to one of ordinary skill in the art to modify *WAPA*

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such that its frame has a thermal expansion rate compatible with that of the wiring board and its cap having a thermal expansion rate different from that of the frame in order to lessen warp and insure reliability of connections as taught by Watanabe (Col. 6, Lines 5-13).

Furthermore with respect to the selection of materials in claims 2, 4-6 and 8 being FeNi, AL, CU, plastic and elastic, these are common materials used for cap and frame materials in packages as evidenced by Watanabe, its selection would have been obvious to one of ordinary skill in the art, since it has been held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

With respect to claim 5, the prior art forms the same structure as claimed. Although Watanabe does not appear to explicitly teach the process limitations of the intervening member being "slidably disposed between the frame and the cap," the product of Watanabe inherently possesses the structural characteristics imparted by the process limitation. See *In re Fitzgerald, Sanders, and Bagheri*, 205 USPQ 594 (CCPA 1980).

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohara et al. (U.S. 4,654,966) in combination with Satoh et al. (U.S. 5,276,289).

Kohara (Fig 1; Column 1, Lines 20-51) discloses a sealing structure for multi-chip modules comprising an inherent wiring board (7) having one face mounted with a plurality of semiconductor devices (6) and another face having connecting pins (8)

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arranged thereover, a flange that gives structure strength and therefore is a frame (2) inherently having a thermal expansion rate compatible with that of the wiring board (frame bonded to board), an air-cooled heat sink cap (1) covering the plurality of semiconductor devices, the cap having a thermal expansion rate different from that of the frame, a heat conducting material (5) provided between a plurality of the semiconductor devices and the cap for transmitting heat generated by the plurality of semiconductor devices to the cap, an inherent attachment for fixing the frame and the wiring board to each other (Column 1, Lines 36-37) and an elastic O- ring intervening member (4) disposed between the frame and the cap for joining the frame and the cap to each other ; whereby the ring is a part of the packaging and therefore is packing material.

Kohara does not disclose its frame and cap spaced apart without any physical contact.

However Satoh (Fig. 9) shows a cap attached to a spaced apart (e.g. space taken by adhesive, 13).

Because use of adhesive is one of a finite methods to solve the problem of attaching caps to frames as evidenced by Thomas, it would have been obvious to one of ordinary skill in the art to try using known adhesives as an alternative attachment means. E.g. KSR v Teleflex, 550 U.S. ,17 (2007) (finding that when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known

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options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense).

With respect to claim 5, although Kohara does not appear to explicitly teach the process limitations of the intervening member being “slidably disposed between the frame and the cap,” the product of Kohara inherently possesses the structural characteristics imparted by the process limitation. See *In re Fitzgerald, Sanders, and Bagheri*, 205 USPQ 594 (CCPA 1980).

With respect to the selection of materials in claims 2, 4-6 and 8 being FeNi, AL, CU, plastic and elastic, these are common material used for cap and frame materials in packages as evidenced by Watanabe, its selection would have been obvious to one of ordinary skill in the art, since it has been held that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Allowable Subject Matter

Claims 9-12 are allowable.

The following is a statement of reasons for the indication of allowable subject matter: the prior art does not disclose or make obvious a fastener fastening a first and second frame and cap together wherein there is an absence of any direct physical contact between the cap and either of the frames including all the limitation of the independent claims.

Response to Arguments

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Applicant's arguments with respect to his amended claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES M. MITCHELL whose telephone number is (571)272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Carl Whitehead Jr./
Supervisory Patent Examiner, Art Unit 2813

April 13, 2008
/James M. Mitchell/
Examiner, Art Unit 2813

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